

## ON THE STATE OF THE CONGO FLORA

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As a tribute to my good friend, the late Dr. R. E. Woodson, Jr., the initiator of an illustrated Flora of Panama, a short note on the origin and progress of the Congo Flora may here not be out of place.

I. After my first botanical exploration of the former "Congo Belge et Ruanda-Urundi," in 1925-1926, I put forward, in June 1927, the idea of publishing a regional flora of that great geographical area of central Africa, fitting in with the plan of regional intertropical African floras elaborated at the Royal Botanic Gardens, Kew.

At that time, the Congo flora was rather incompletely known, notwithstanding the numerous publications of the late Dr. É. De Wildeman. Important and rapidly growing herbarium material deposited at the State Botanical Garden, Brussels, was waiting to be worked out. Moreover, due to the political boundaries, the area covered most of the diverse vegetation and floristic territories of intertropical Africa, making the task of writing a flora rather difficult.

After the foundation of the "Institut National pour l'Étude Agronomique du Congo Belge" or I.N.É.A.C. in December 1933, it became soon obvious that a scientific and up-to-date knowledge of the flora was basic for a rational exploitation of the renewable resources of the country and especially for its agricultural expansion.

In 1942, during the second world war, a provisional joint Committee was set up by the I.N.É.A.C. and the State Botanical Garden to consider appropriate means for publishing the Flora in question.

A scheme was outlined for the publication of a general Flora, subdivided into several parts: a Flora of the Spermatophytes, a Flora of the Pteridophytes, a Flora of the Bryophytes and a Flora of the Thallophytes.

The main directions for the preparation of the general Flora were fixed as follows:

1. The study, made by families, is to be based on a critical revision of all herbarium material of the area available at Brussels and in other herbaria.
2. Workable analytical keys for all taxa of infra-family rank must allow the determination not only of the herbarium material, but also of living plants in the field.
3. For each taxon a full description is to be given according to a standard sequence.
4. The bibliography and synonymy must be given fully, but restricted to the area concerned.



5. The geographical distribution must be indicated inside the phytogeographical territories of the area (see map, Fig. 1), by citation of controlled and representative specimens. The type specimen is to be cited when it is collected inside the area.
6. The general distribution outside the area is to be given as accurately as possible.
7. Indications on the habitat, as well as native names and uses, must be added.
8. If necessary or useful, taxonomic remarks and other notes will be given at the end.
9. All exotic taxa are to be printed in smaller type and without numbering.
10. All new taxa are to be published with descriptions in the Bulletin of the State Botanical Garden, but all new combinations and synonyms must be given in the Flora.
11. Original line drawings, mainly plates with habit and analyses of reproductive organs on a standard scale, at least one per genus or one per group of 10 species, will be supplied with indication of the specimen or specimens on which they are based. Other illustrations may be added.

Considering their prime importance and the rich available herbarium material, it was decided to start the general Flora with that of the Spermatophytes.

An Executive Committee of the Congo Flora, presided over by the Director of the State Botanical Garden, was entrusted with the scientific direction of that Flora, the families of which should be published in the systematical sequence of the Engler system.

General instructions were provided for the collaborators, who had to work at the State Botanical Garden, where the extensive library, the herbarium collections and all working facilities were put at their entire disposal. On the other hand, financial support was given by the I.N.É.A.C., not only for the salaries of the permanent collaborators, apart from the members of the Garden staff, but also for the cost of publication. Occasional collaborators were invited on contract.

The Flora is prepared by the Executive Committee and the State Botanical Garden and published, in 8° size, at Brussels by the I.N.É.A.C. It bears the title "Flore du Congo Belge et du Ruanda-Urundi—Spermatophytes" for the volumes I to VII and IX and for the analytical key of the families. Volumes VIII(1) and X appeared after the Congo Independence under the altered title "Flore du Congo, du Rwanda et du Burundi—Spermatophytes."

Shortly after the Congo Independence, the I.N.É.A.C. was dissolved, and the Executive Committee had no more power to act. The whole organisation was then taken over by the Belgian Government and volume XI, currently in preparation, will probably be issued in the course of 1965 under the auspices of the State Botanical Garden. The future and the continuation of the Flora are hereby assured.

The list, with the contents, of the actually published volumes of the "Flore des Spermatophytes" is as follows:

1948—Volume I: *Cycadaceae*, *Podocarpaceae*, *Cupressaceae*, *Gnetaceae*, *Piperaceae*, *Hydrostachyaceae*, *Myricaceae*, *Ulmaceae*, *Moraceae*, *Urticaceae*, *Podostemaceae*, *Proteaceae*, *Olacaceae*, *Opiliaceae*, *Octoknemaceae*, *Santalaceae*, *Loranthaceae*, *Aristolochiaceae*,



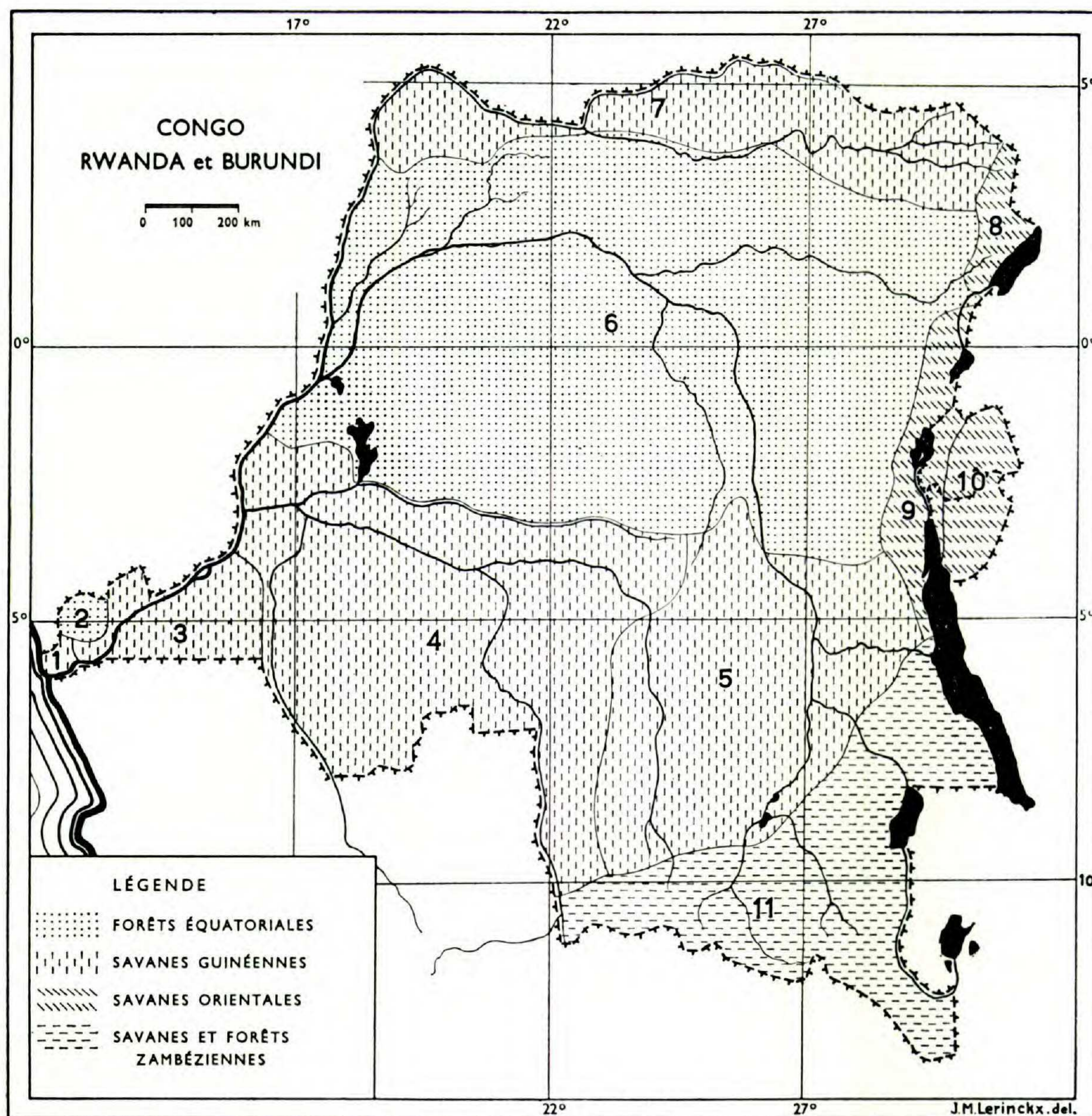


Fig. 1. Phytogeographical Territories after W. Robyns. -1. Coast. -2. Mayumbe. -3. Lower-Congo. -4. Kasai. -5. Lower-Katanga. -6. Central Forest. -7. Ubangi-Uele. -8. Lake Albert. -9. Lakes Edward and Kivu. -10. Rwanda-Burundi. -11. Upper-Katanga.

- Rafflesiaceae, Hydnoraceae, Balanophoraceae, Polygonaceae*; 446 p., XLI pl., 1 col. front., 1 col. pl., 3 fig., 12 phot.
- 1951—Volume II: *Chenopodiaceae, Amaranthaceae, Nyctaginaceae, Phytolaccaceae, Aizoaceae, Portulacaceae, Basellaceae, Caryophyllaceae, Nymphaeaceae, Ceratophyllaceae, Ranunculaceae, Menispermaceae, Annonaceae, Myristicaceae, Monimiaceae, Lauraceae, Hernandiaceae, Fumariaceae, Cappariaceae, Cruciferae, Resedaceae, Droseraceae, Crasulaceae, Pittosporaceae, Hamamelidaceae*; 609 p., LVII pl., 1 col. front., 9 fig., 5 phot.
- 1952—Volume III: *Rosaceae, Connaraceae, Mimosaceae, Caesalpiniaceae*; 579 p., XL pl., 1 col. front., 46 fig., 15 phot., 1 map.
- 1953—Volume IV: *Papilionaceae*, part 1; 314 p., XVIII pl., 20 fig., 1 map.
- 1954—Volume V: *Papilionaceae*, part 2; 377 p., XXVII pl., 25 fig., 1 phot., 1 map.
- 1954—Volume VI: *Papilionaceae*, part 3; 426 p., XXXII pl., 18 fig., 1 map.
- 1958—Volume VII: *Pandaceae, Oxalidaceae, Geraniaceae, Linaceae, Erythroxylaceae, Lepidobotryaceae, Zygophyllaceae, Balanitaceae, Rutaceae, Irvingiaceae, Simaroubaceae, Burseraceae, Meliaceae, Malpighiaceae, Vochysiaceae, Polygalaceae, Dichapetalaceae, Callitrichaceae*; 367 p., XXXVI pl., 11 fig., 1 phot., 1 map.
- 1958—Tableau analytique des familles; 69 p.
- 1962—Volume VIII(1): *Euphorbiaceae*, partim; 214 p., XIII pl., 16 fig., 4 phot., 1 map.



1960—Volume IX: *Buxaceae*, *Anacardiaceae*, *Aquifoliaceae*, *Celastraceae*, *Hippocrateaceae*, *Salvadoraceae*, *Icacinaceae*, *Sapindaceae*, *Melianthaceae*, *Balsaminaceae*, *Rhamnaceae*, *Vitaceae*, *Leeaceae*; 597 p., LVI pl., 14 fig., 3 phot., 1 map.

1963—Volume X: *Tiliaceae*, *Malvaceae*, *Bombacaceae*, *Sterculiaceae*, *Huaceae*, *Scytopetalaceae*; 352 p., XXX pl., 6 fig., 1 map.

A general account of all the indigenous taxa treated in these volumes is given in the following table, to which has been added, for comparison, the corresponding account for 1940<sup>1</sup>:

Dates	Families	Genera	Species	Infraspecific taxa
1963	90	599	3,171	480
1940	80	563	3,305	425
Differences	+10	+36	-134	+55

Commenting briefly upon this table it appears:

1. The increase in the number of families is partly due to the discovery of families unknown in 1940: *Cupressaceae*, *Hydnoraceae* and *Hamamelidaceae* and partly to the splitting of some families as the *Leguminosae* into: *Mimosaceae*, *Caesalpiniaceae* and *Papilionaceae*, and the treatment of *Lepidobotryaceae*, *Balanitaceae*, *Irvingiaceae*, *Leeaceae* and *Huaceae* as separate families.
2. The total number of genera has increased by 36 among which 24 are new: *Beirnaertia* Louis ex Troupin; *Hyalosepalum* Troupin; *Leptoterantha* Louis ex Troupin; *Exellea* Boutique; *Toussaintia* Boutique; *Afroguettaria* Boutique; *Atopostema* Boutique; *Gilbertiella* Boutique (Volume II).—*Lebruni dendron* J. Léonard; *Gilbertiodendron* J. Léonard; *Michelsonia* Hauman; *Pseudoberlinia* Duvign.; *Pseudomacrolobium* Hauman (Volume III).—*Robynsiophyton* Wilczek (Volume IV).—*Humularia* Duvign. (Volume V).—*Pseudoeriosema* Hauman; *Haydonia* Wilczek; *Clitoriopsis* Wilczek (Volume VI).—*Flabellariopsis* Wilczek (Volume VII).—*Cavacoa* J. Léonard; *Cytharanthus* J. Léonard; *Duvigneaudia* J. Léonard [Volume VIII (1)].—*Apodostigma* Wilczek; *Bequaertia* Wilczek (Volume IX).
3. The total number of species has decreased by 134, notwithstanding the description of 533 new species which it is impossible to enumerate here. It is to be emphasized that the main scope of the Flora, resulting in an up-to-date knowledge, is a critical study on the species level. Many species previously cited up to 1940 were incorrectly named and had been reduced to synonyms or cited as misidentifications. Furthermore, new delimitations of taxa following a better knowledge of the available material are responsible for numerous new combinations, whereas many species are cited for the first time in the area of the Flora.
4. The infraspecific taxa, subspecies, varieties and forms, are in small progress and include 240 new taxa. Here again, the foregoing comments for the species are entirely applicable.

<sup>1</sup> W. ROBYNS, Statistiques de nos connaissances sur les Spermatophytes du Congo Belge et du Ruanda-Urundi. Bull. Jard. Bot. État Brux., **XVIII**, p. 133-144 (1946).



In conclusion, a certain compensation appears between the reduction into synonymy of the specific and infraspecific taxa on one side, and the discovery of new specific and infraspecific taxa on the other side, so that in the end the total number of these taxa known in 1940 remains nearly unaltered. Notwithstanding this situation, the balance of the work is fairly positive and represents an actual and considerable progress of our knowledge of the Congo Flora both in the field of taxonomy and of chorology. The enterprise is therefore worthy of the 28 scientific collaborators, who spared no time or efforts to produce a valuable and lasting contribution to the Flora of continental intertropical Africa.

II. In 1935 and 1936 the first two fascicles of the "Flore Iconographique des Champignons du Congo" were published at the initiative of the late M. Beeli. The Flora is based on a collection of herbarium specimens with water-color drawings of higher Fungi made in Congo by Mme. Goossens Fontana from 1919 and preserved at the State Botanical Garden. This outstanding collection has grown since to more than 1000 aquarelles, mostly with additional microscopic analyses and explanatory notes.

Unfortunately, the publication had to be discontinued after 1936 for lack of funds, but thanks to the understanding of the Ministry of Agriculture of Belgium, the State Botanical Garden was able, in 1954, to resume it, with the collaboration of several mycologists of international reputation, at the rate of one fascicle per year. Each fascicle, in 4° size, comprises 3 to 4 colored plates with a corresponding text.

Actually 14 fascicles are issued as follows:

- 1935—Fascicle 1: Genera *Amanita* and *Volvaria*.
- 1936—Fascicle 2: Genera *Lepiota* and *Annularia*.
- 1954—Fascicle 3: *Boletineae*.
- 1955—Fascicle 4: Genus *Lactarius*.
- 1956—Fascicle 5: Genus *Agaricus* I.
- 1957—Fascicle 6: Genera *Agaricus* II, *Pilosace* and *Rhodophyllus*.
- 1958—Fascicle 7: Genus *Termitomyces*.
- 1959—Fascicle 8: *Cantharellineae*.
- 1960—Fascicle 9: *Discomycetes*.
- 1961—Fascicle 10: Genus *Stereum* s. 1.
- 1962—Fascicle 11: *Xylarioideae* and *Thamnomycetoideae*.
- 1963—Fascicle 12: *Gasteromycetales* I.
- 1964—Fascicle 13: *Gasteromycetales* II.
- 1965—Fascicle 14: Genus *Marasmius*.

The "Flore Iconographique des Champignons du Congo" constitutes not only an important contribution to the Congo mycology, but it is also a fundamental preliminary step towards the publication of a future Flora of the Fungi, included in the scheme of the general Congo Flora.